## CLAIMS

We claim:

1. A method for distributing presentations comprising:

providing a presentation preparation system adapted to distribute presentations via a complex network to remote clients;

establishing a bi-directional communications connection within the complex network, the bi-directional communications connection disposed between a first remote client and the presentation preparation system;

the first remote client transmitting to the presentation preparation system via the bi-directional communications connection a user identification and an indication of a transmission path, the user identification including a destination address corresponding to the first remote client;

the first remote client transmitting to the presentation preparation system, an indication of a user selection of a first presentation, the first presentation comprising selectable data objects including multimedia elements; and

the first remote client receiving from the presentation preparation system an encoded digital data stream including portions of the first presentation over the transmission path.

2. The method of claim 1 including:

the presentation preparation system retrieving the selectable data objects from data sources;

the presentation preparation system assigning and attaching the destination address and the transmission path indication to the selectable data objects to form addressed data objects;

the presentation preparation system assembling an encoded digital data stream formatted for processing by the first remote client, the encoded digital data stream including the addressed data objects; and

the presentation preparation system transmitting the encoded digital data stream to the first remote client over the transmission path.

3. The method of claim 1, wherein the encoded digital data stream includes multimedia elements encoded according to MPEG techniques.

4. The method of claim 1, wherein the remote clients comprise addressable processing equipment, the addressable processing equipment connected to display equipment, the method including:

distributing the presentations to a group of remote clients;

at least one of the remote clients in the group receiving encoded digital data streams having destination addresses of addressable processing equipment of the at least one remote client, and

the addressable processing equipment of the at least one remote client decoding the received encoded digital data streams for viewing on corresponding display equipment.

5. The method of claim 1, wherein:

the remote clients disposed on user premises;

the establishing of the bi-directional communications connection includes transporting addressable communications to and from the remote clients and to and from servers using distribution facilities, the distribution facilities are adapted to establish a plurality of transmission paths for the transporting, the transmission paths are adapted to pass a plurality of the encoded digital data streams;

the servers disposed at remote server locations apart from the local distribution facilities, the remote server locations including one or more of intermediate operating sites, head-ends, trunking hubs and distribution hubs;

the distribution facilities are adapted to transmit addressed messages corresponding to the network destinations and the remote clients.

6. The method of claim 1, including:

distributing the presentations to a group of remote clients, the remote clients in the group having different transmission paths, the transmission paths include hub processing resources disposed at distribution hubs, each of the distribution hubs has one of a destination addresses and a dedicated route;

the hub processing resources performing one or more of appending or attaching a path identification to messages from the remote clients, the path identification is adapted to inform the presentation preparation system receiving the messages of the distribution hub destination addresses corresponding to the messages;

and

the presentation preparation system transmitting the presentation data to the remote clients through the corresponding hubs.

7. The method of claim 1, wherein the data objects include one or more of images, audio, text, graphics commands, and scripts, and the method includes playing and displaying the first presentation, the playing and displaying including sequencing the data objects according to a script during the playing and the displaying.

8. The method of claim 1, wherein the multimedia elements include one or more of still-frame video image data, motion video data, animated video data, static and dynamic text and video overlay data, background audio data, audio segment data, and reduced instruction set commands, the video data adapted to provide fractional screen viewing and full screen viewing, and wherein the method includes playing and displaying the first presentation, the playing and displaying including providing fractional screen viewing and full screen viewing.

9. The method of claim 1, wherein the multimedia elements include still-frame video images, the presentation preparation system includes one or more data encoding multiplexers including a first data encoding multiplexer, and the method further comprises:

the first data encoding multiplexer examining a first set of packets in the encoded digital data stream; and

in response to a priority program clock reference and a packet identification for the first set of packets indicating a drop and insert criteria, the presentation preparation system replacing the first set of packets with a second set of packets.

10. The method of claim 1, wherein:

the multimedia elements include still-frame video images; and

the presentation preparation system disposed at a local operating center, the local operating center connected to the remote client by a local distribution network, the local operating center having an encoded digital data stream transmission capacity corresponding to a maximum number of simultaneous users, each of the simultaneous

users transmitting indications of corresponding user selections; and

the method includes:

in response to more than the maximum number of simultaneous users, the local operations center transmitting over the transmission paths:

encoded digital data streams to remote clients for a first number of simultaneous users, the first number no greater than the maximum number of simultaneous users; and

one or more of:

delayed encoded digital data streams to remote clients for the remaining simultaneous users; and

a signal adapted to trigger display based on data stored within addressable processing equipment corresponding to the remaining simultaneous users.

11. The method of claim 1, wherein:

the multimedia elements include still-frame video images and motion video images;

and the method includes

in response to receipt of indications of user selections from users, the presentation preparation system processing and transmitting the selected presentations to the users; and

the presentation preparation system prioritizing the processing and transmitting of the motion video images and the still frame images using software algorithms based upon MPEG-encoding statistics.

12. The method of claim 1, wherein the encoded digital data stream includes:

encoded multimedia element data;

encoded auxiliary data; and

network packet processing information data.

13. The method of claim 1, wherein:

the multimedia elements include still frame video images; and

the presentation preparation system uses a single program clock reference for

simultaneous users of the encoded digital data stream.

14. The method of claim 1, wherein prior to the transmitting of the user identification, the method includes:

a local distributor assigning one or more channel frequencies for transmitting the addressed data objects to the remote clients;

a user corresponding to the first remote client selecting one of the channel frequencies by tuning the first remote client, the selected channel frequency corresponding to one or more presentation preparation systems including the presentation preparation system;

the presentation preparation system transmitting a server identification signal including the transmission path to the remote client; and

the remote client detecting and storing the transmission path.

15. The method of claim 1, wherein the method includes a log-on request between the first remote client and the presentation preparation system including:

the first remote client transmitting the user identification to the presentation preparation system;

the presentation preparation system transmitting a user number to the first remote client; and

the presentation preparation system and the first remote client using the user number to encode and decode the first presentation.

16. The method of claim 1, wherein the method includes a log-on request between the first remote client and the presentation preparation system including:

the first remote client transmitting the user identification to the presentation preparation system; and

the presentation preparation system and the first remote client calculating from a common algorithm a user number, the user number adapted to identify packets passing from the presentation preparation system to the first remote client.

17. The method of claim 2, wherein the assembling includes encoding the addressed data objects, the encoding accomplished according to MPEG techniques.

18. The method of claim 2, including:

the presentation preparation system combining a plurality of uniquely-addressed encoded digital data streams to form combined data streams,

the presentation preparation system transmitting the combined data streams via complex communications networks to local distribution platforms;

the local distribution platforms assembling portions of the combined encoded data streams to form assembled data streams;

the local distribution platforms forwarding the assembled data streams to distribution networks, the distribution networks including lines that pass input ports of the remote clients, the remote clients including addressable processing equipment; and

responsive to assembled data streams having addressed data streams with addresses corresponding to the remote clients and passing the input ports, the remote clients receiving the addressed data streams.

19. The method of claim 2, further comprising:

the first remote client transmitting a log-on request to the presentation preparation system, the log-on request including the user identification;

in response to the log-on request, the presentation preparation system assigning a user number to the first remote client; and

the presentation preparation system and the first remote client generating encoded header packet identification numbers (PIDs) for the multimedia elements by using an algorithm, the multimedia elements including one or more of video, audio and graphics data; and

in response to the indication of the user selection, the assembling includes placing the PIDs in the addressed data objects, the PIDs constructed to include the user number.

20. The method of claim 2, wherein the data sources include databases of one or more of video, audio and data transport stream files including a first group of databases disposed with the presentation preparation system and other databases remote from the presentation preparation system, the other databases including Internet service provider maintained databases, and the method includes the presentation preparation system constructing semantic context to describe locations,

file sizes, definitions of hyperlinks, and descriptions of animations and other dynamic content.

21. The method of claim 2, wherein the multimedia elements include still-frame video images and accompanying audio, the method includes encoding each audio data object and each video data object with timing information prior to the assembling step, the destination address and the timing information inserted into headers attached to the encoded digital data stream, during the assembling step.

22. The method of claim 2, wherein:

the multimedia elements include still-frame video images, the transmitting of the encoded digital data stream includes one or both of a variable-bit-rate delivery and a constant-bit-rate deliver of motion video; and

the method further comprises displaying the motion video on a display device disposed at customer premises, the motion video display corresponding to a still-frame common program clock reference for a fractional frame overlay of a first image on a second image, the first image and the second image comprise one of a still-frame video image and a motion video image.

23. The method of claim 2, wherein:

the encoded digital data stream formatted according to MPEG techniques; and

the assigning and attaching performed for each selectable data object includes:

a first transforming of each selectable data object into an MPEG elementary data stream, the first transforming including attaching time stamp information to the MPEG elementary data stream; and

a second transforming of the MPEG elementary data stream into an MPEG transport data stream, the second transforming including attaching packet identification information.

24. The method of claim 2, wherein the method further comprises:

a first server in the presentation preparation system streaming data objects through a first group of encoded data multiplexers, the first server and the first group of encoded data multiplexers are disposed at a first operations center, each of the first group of encoded data multiplexers receiving encoded data related to a corresponding

presentation; and

the assembling includes:

each of the first group of encoded data multiplexers adding packet header information to the encoded data to form addressed composite data objects;

a transport multiplexer receiving the addressed composite data objects from one or more of the first group of encoded data multiplexers, the transport multiplexer is disposed at the first operations center; and

the transport multiplexer assembling a transport data stream from data received from one or more of the first group multiplexers.

25. The method of claim 9, wherein:

each of the data encoding multiplexers is adapted to assign and attach the destination address and the transmission path indication to the selectable data objects to form addressed data objects; and

the replacing is adapted to accommodate a data rate capacity limitation of a transport multiplexer by delaying transmitting of a first addressed data stream including the addressed data objects and transmitting a second addressed data stream before transmitting the first data stream, the second data stream has a lower data rate than the first data stream.

26. The method of claim 9, wherein the replacing is adapted to synchronize the addition and deletion of selected packets in the multimedia elements in the first presentation.

27. The method of claim 9, wherein the second set of packets correspond to a delayed data stream, transmission of the delayed data stream from the presentation preparation system having been set initially for an earlier time.

28. The method of claim 11, wherein the first remote client receives the first presentation via a first channel, the first channel is adapted to simultaneously transmit up to a maximum bit transmission rate, and the prioritizing is adapted to prevent exceeding the maximum bit transmission rate in the first channel.

29. The method of claim 12, wherein the network packet processing

information data includes:

data corresponding to a program association table;

data corresponding to a program map table; and

data corresponding to a program clock reference.

30. The method of claim 18, wherein the complex communications networks comprise one or more of broadband wide area networks and broadband metropolitan networks.

31. The method of claim 24, further comprising:

transport de-multiplexers disassembling the transport stream to provide the data to channel modulators, each of the channel modulators having a corresponding data rate capacity, the quantity of data provided by the transport de-multiplexer including data rates up to the corresponding capacity of each of the channel modulators;

each of the channel modulators distributing a stream of data to addressable processing equipment via a bi-directional distribution network identified by the transmission path.

32. The method of claim 24, wherein the assigning and attaching includes each of the first group of multiplexers dividing the data stream into a framework, the framework including a first number of slots, the number of slots corresponding to a minimum data rate of the first presentation.

33. The method of claim 32, wherein the dividing includes forming frames, the data inserted in each frame by one of the first group of multiplexers according to the following priority:

first, inserting transmit control and network information;

secondly, inserting timing information;

thirdly, inserting constant data rate information; and

fourthly, inserting variable data rate information.

34. The method of claim 33, wherein:

the constant data rate information includes audio data; and

the variable data rate information includes video data, the inserting of the variable data rate information includes throttling of the variable data rate information to maintain synchronization between the audio data and the video data.

35. A method for selectively distributing presentations via a communications network, the method comprising:

providing a presentation system having processing resources;

the presentation system processing resources encoding non-selected data with a server complex identification;

the presentation system processing resources transmitting encoded non-selected data to remote clients, the remote clients having processing resources;

establishing a communications network connection between the presentation system and a first remote client;

the first remote client processing resources detecting the server complex identification;

upon establishing the communications network connection, the first remote client processing resources transmitting a transmission path indication to the presentation system via the communications network connection;

the first remote client processing resources transmitting:

an indication of a user selection of a first presentation to the presentation system via the communications network connection, and

an indication of a destination address for the first remote client;

the presentation system processing resources retrieving data related to the first presentation from data sources;

the presentation system processing resources assembling the data into an encoded digital data stream, the encoded digital data stream including:

the destination address for the first remote client; and

the transmission path from the presentation system to the first remote client; and

the presentation system transmitting the encoded digital data stream to the first remote client over the transmission path.

36. A method for selectively distributing presentations via a communications network, the method comprising:

a user establishing a telephone line connection with a presentation system, the presentation system having processing resources, the user having access to a remote client, the remote client having processing resources;

upon establishing the telephone line connection, the presentation system processing resources identifying the destination address and the transmission path from one or both of the user calling number identification and a database of user information;

the remote client processing resources transmitting a request for a selected presentation to the presentation system via the telephone line connection;

the presentation system processing resources retrieving data related to the selected presentation from data sources,

the presentation system processing resources assembling the data to form an encoded digital data stream including:

a destination address associated with the remote client, and

the transmission path for the remote client; and,

the presentation system transmitting the encoded digital data stream to the remote client over the transmission path.

37. A communications system comprising:

one or more presentation preparation systems having processing resources adapted to:

process and transmit digital data corresponding to presentations, the digital data transmitted by the presentation preparation system processing resources including encoded digital data streams; and

in response to user inputs, perform transactions related to the presentations;

input and output devices, each of the input and output devices is adapted to communicate with the presentation preparation systems; the presentation preparation systems are adapted to receive inputs and outputs from simultaneous users, each of the simultaneous users corresponding to one of the input and output devices, the inputs including requests of selected presentations, the selected presentations including multimedia elements;

one or more signal processors having network destination addresses, the signal processors are adapted to receive and process the encoded digital data streams, the

processing of the encoded digital data streams including converting the encoded digital data corresponding to the selected presentations into converted digital data having formats adapted to enable viewing on display devices, the user inputs and the encoded digital data streams including the signal processor network destination addresses; and

a bi-directional communications complex network adapted to connect the signal processors and the presentation preparation systems.

38. The system of claim 37 further comprising:

signal receivers disposed at local distribution platforms, the local distribution platform are disposed in the bi-directional communications complex network; and

signal transmitters adapted to transmit encoded digital data received from the presentation preparation systems to signal receivers, the signal transmitters and the presentation preparation systems are disposed at operations centers, the signal receivers are adapted to receive user identifications and requests from the input and output devices.

39. The system of claim 37, wherein:

the presentation preparation systems are adapted to prepare and store the digital data corresponding to the presentations; and

the signal processors are adapted to process the encoded digital data streams.

40. The system of claim 37, wherein the user inputs from the simultaneous users include user inputs provided after user viewing of a portion of the first presentation.

41. The system of claim 37, wherein the multimedia elements include one or more of still frame video images, motion video images, audio, overlay graphics and text accompanying the still frame video images; and a list of options related to the selected presentations, the options adapted for user selection.

42. The system of claim 37, wherein the encoded digital data are formatted according to MPEG techniques.

43. The system of claim 37, wherein the presentation preparation systems processing resources are adapted to retrieve information from one or more of third party service providers and third party information providers.

44. The system of claim 37, wherein:

the multimedia elements include one or more of still frame video images and motion video images;

the multimedia elements are formatted as encoded digital data objects, and multimedia elements corresponding to each of the selected presentations transmitted as an encoded presentation data stream; and

the system is adapted to use a single program clock reference for a user of the encoded presentation data stream.

45. The system of claim 37, including:

remote clients disposed at premises of the simultaneous users, each of the remote clients is adapted to:

receive inputs from a user including a request for a first presentation; and

forward the first presentation request to the presentation preparation systems, the first presentation request includes a destination address corresponding to the remote client;

the multimedia elements include one or more of video data objects and audio data objects, the video data objects include data corresponding to one or more of still-frame video images, and motion video images, the audio data objects and the video data objects are encoded with timing information prior to the processing by the signal processors, and

the presentation preparation systems processing resources are adapted to:

assemble encoded data streams corresponding to the first presentation, the destination address and the timing information inserted into appropriate headers attached to the encoded data streams during the assembling; and

transmit the encoded digital data streams to the signal processors.

46. The system of claim 37, including:

remote clients disposed at premises of the simultaneous users, each of the

remote clients is adapted to transmit the user input to the presentation preparation systems; and wherein:

the bi-directional communications network complex including local distribution networks connecting the remote clients to the presentation preparation systems; and

the presentation preparation systems include a local operations center, the local operations center connected to the remote client by at least one of the local distribution networks.

47. The system of claim 37, wherein:

the multimedia elements include still-frame video images and motion video images; and

the presentation preparation systems processing resources are adapted to prioritize the processing and transmitting of the motion video images and the still frame images using software algorithms based upon MPEG-encoding techniques and network traffic statistics.

48. The system of claim 37, including:

remote clients having destination addresses, the remote clients are adapted to:

receive the inputs from the input devices;

transmit requests and data corresponding to the inputs to the presentation preparation systems;

receive the converted digital data from the signal processors; and

transmit the converted digital data to the display devices; and wherein:

each of the presentation preparation systems includes a corresponding presentation server adapted to transmit a server identification signal to each of the remote clients; and

the remote clients are adapted to:

detect and store the server identification signal, and store a server identification included in the server identification signal; and

add the server identification signal to messages transmitted from the remote clients to the corresponding presentation server.

49. The system of claim 37, wherein the signal processors are disposed in

remote clients, the remote clients are disposed at customer premises locations and are adapted to:

receive inputs from corresponding users, communications and presentations;

forward the communications and the presentations to user display equipment; and

forward the inputs from the corresponding users to the presentation preparation systems.

50. The system of claim 37, wherein:

the signal processors are disposed in addressable processing equipment having destination addresses;

the bi-directional communications complex network adapted to transmit signals having destination addresses corresponding to the addressable processing equipment; and

each addressable processing equipment adapted to selectively retrieve signals having the corresponding destination address transmitted from the bi-directional communications complex network.

51. The system of claim 37, wherein the presentation preparation system includes a system controller adapted to determine the location of the multimedia elements.

52. The system of claim 37, wherein the presentation preparation system includes a system controller and a rendered cache, the system controller includes a browser, in response to one of the user inputs requesting data corresponding to a URL, the browser is adapted to:

retrieve pages previously prepared and stored from the rendered cache; and

retrieve from an Internet one or more pages corresponding to the URL.

53. The system of claim 40, wherein the multimedia elements include a list of options, the options adapted for user selection, the list of options including at least one option for performing at least one transaction related to the selected presentation.

54. The system of claim 40, wherein the multimedia elements include a list

of options, the list of options including at least one option for requesting a second presentation for viewing on at least one of the display devices.

55. The system of claim 43, wherein the information retrieved from the one or more third party service providers is adapted for overlay on the selected presentation.

56. The system of claim 43, wherein the information retrieved from the one or more third party service providers is adapted to replace one or more of the selected presentations.

57. The system of claim 46, wherein the local operations center is adapted to:

respond to a maximum number of simultaneous active users by processing and transmitting presentations selected by the simultaneous active users; and

respond to a number of active users transmitting requests of selected presentations exceeding the maximum number of simultaneous active users, by transmitting over the local distribution networks:

encoded data streams from the local operations center to remote clients for a first number of users, the first number having a value no greater than the maximum number of simultaneous active users, the number of active users comprising the first number of users and a remaining number of users; and

common multimedia presentations to the remaining number of users.

58. The system of claim 47, wherein:

the presentation preparation systems processing resources are adapted to transmit the encoded digital data stream at transmission bit rates up to a maximum transmission bit rate; and

the prioritizing is adapted to prevent exceeding the maximum transmission bit rate.

59. The system of claim 48, wherein:

the inputs include transmission paths and the destination addresses corresponding to the remote clients;

the presentation preparation systems are adapted to respond to input from a first remote client by calculating a user number corresponding to a first remote client destination address; and

the first remote client and the presentation preparation systems are adapted to calculate encoded data packet identifiers for the selected presentation based on the user number.

60. The system of claim 50, including remote clients disposed at customer premises, the addressable processing equipment comprising the remote clients.

61. A method for interactive distribution of selectable presentations to remote clients having processing resources, the method comprising:

establishing a communications path between a presentation system and a first remote client, the presentation system having processing resources including a system controller and a central repository including one or more of video, audio, graphics and text, the presentation system and the first remote client are connected in a bi-directional distribution network;

the first remote client requesting a first data object, the first data object corresponding to a selected presentation;

the presentation system processing resources assembling an encoded digital data stream corresponding to the first data object;

the presentation system processing resources generating an addressable data object including the encoded digital data stream, an indication of a destination address corresponding to the first remote client, and an indication of a transmission path for the addressable data object;

the system controller associating the destination address and the transmission path for the addressable data object; and

the first remote client causing the playing and displaying of multimedia elements corresponding to the first data object.

62. The method of claim 61, wherein:

the encoded digital data stream formatted according to MPEG techniques to form an MPEG data stream; and

the MPEG data stream includes image elements in the first data object.

63. The method of claim 61, wherein prior to the assembling of the encoded digital data stream, the method includes authoring tools creating multimedia elements, the data object includes the multimedia elements, the central repository is adapted to store multimedia elements created by the authoring tools.

64. A communications system comprising:

presentation preparation means for:

processing and transmitting digital data corresponding to presentations, the digital data transmitted by the presentation preparation system processing resources including encoded digital data streams; and

in response to user inputs, performing transactions related to the presentations;

input and output means for communicating with the presentation preparation means; the presentation preparation means adapted to receive inputs and outputs from simultaneous users, each of the simultaneous users corresponding to one of the input and output means, the inputs including requests of selected presentations, the selected presentations including multimedia elements;

one or more signal processor means having network destination addresses, the signal processor means for receiving and processing the encoded digital data streams, the processing of the encoded digital data streams including converting the encoded digital data corresponding to the selected presentations into converted digital data having formats adapted to enable viewing on display devices, the user inputs and the encoded digital data streams including the signal processor network destination addresses; and

a bi-directional communications network means for connecting the signal processors and the presentation preparation systems.